

Software Testing and Validation – 2017/18

Instituto Superior Técnico

Vos
Project Report

Group 01 – Alameda

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1 Method-Scope Tests

1.1 assignPhoneNumber

```
final void assignPhoneNumber(int clientNif, int phoneNumber) throws  
↳ InvalidOperationException {
```

Assigns a free phone number to a client of *Vos* if all conditions are met. If at least one of these conditions does not hold, then this method does not change anything. In such cases, it throws an `InvalidOperationException` exception.

1.1.1 Test Pattern – Category-partition

1.1.2 Functions

- Primary function
 - Assign free phone number to a client without a number
- Secondary functions
 - Throw `InvalidOperationException` if conditions aren't met
 - * Invalid nif ($\text{nif} \notin [10^8, 10^9[$)
 - * Invalid phone number ($\text{number} \notin [10^8, 10^9[$)
 - * Client doesn't exist (valid nif)
 - * Assign a previously assigned number to a client

1.1.3 Input/Output Parameters

- Input
 - `clientNif` – The nif of the client to assign a number to
 - `phoneNumber` – The phone number to be assigned
 - `clients` – The set of *Vos* clients managed by `ClientManager`
- Output
 - `client` – The updated client, if a number was assigned successfully

1.1.4 Categories & Choices

Parameter	Category	Choices
clientNif	<i>Vos</i> client (w/ #numbers phone numbers)	$\#numbers \in [1, 5[$ $\#numbers = 5$ (MAX)
	Not a <i>Vos</i> client	$\text{clientNif} \in [10^8, 10^9[$
	Invalid nif	$\text{clientNif} \notin [10^8, 10^9[$
phoneNumber	<i>Vos</i> phone number	Free (Unassigned) Not free (Assigned)
	Not a <i>Vos</i> number	$\text{phoneNumber} \in [10^8, 10^9[$
	Invalid number	$\text{phoneNumber} \notin [10^8, 10^9[$
clients	n -elements	$n = 0$ (Empty)
		$n \in [1, \text{MAX}]$ (Not empty)

1.1.5 Constraints

- Empty `clients` list precludes the possibility of assigning a `phoneNumber`

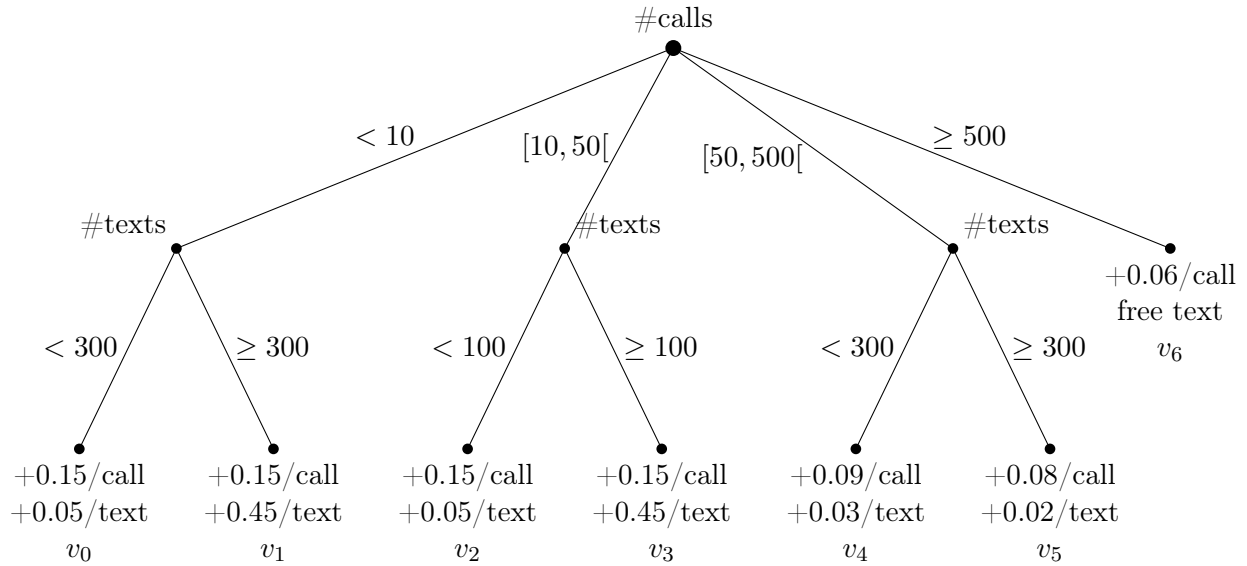
1.1.6 Test Cases

TC	Choices			Expected Result	
	<code>clientNif</code>	<code>phoneNumber</code>	<code>clients</code>	Exception	<code>client</code>
1	$\#numbers \in [1, 5[$	Free	$n \in [1, MAX]$	NO	$\#numbers \in]1, 5]$
2	$\#numbers \in [1, 5[$	Not free	$n \in [1, MAX]$	YES	—
3	$\#numbers \in [1, 5[$	$\notin [10^8, 10^9[$	$n \in [1, MAX]$	YES	—
4	$\#numbers = 5$	Free	$n \in [1, MAX]$	YES	—
5	$\#numbers = 5$	Not free	$n \in [1, MAX]$	YES	—
6	$\#numbers = 5$	$\notin [10^8, 10^9[$	$n \in [1, MAX]$	YES	—
7	$clientNif \in [10^8, 10^9[$	Free	$n \in [1, MAX]$	YES	—
8	$clientNif \in [10^8, 10^9[$	Not free	$n \in [1, MAX]$	YES	—
9	$clientNif \in [10^8, 10^9[$	$\notin [10^8, 10^9[$	$n \in [1, MAX]$	YES	—
10	$clientNif \notin [10^8, 10^9[$	Free	$n \in [1, MAX]$	YES	—
11	$clientNif \notin [10^8, 10^9[$	Not free	$n \in [1, MAX]$	YES	—
12	$clientNif \notin [10^8, 10^9[$	$\notin [10^8, 10^9[$	$n \in [1, MAX]$	YES	—

1.2 computeBill method

The responsibility of `computeBill` method is to determine the value to pay for a client taking into account all communications made by the client through all of his registered mobile phones

1.2.1 Decision Tree



2 Class-Scope Tests

2.1 Client class

2.2 Mobile class